



US Army Corps
of Engineers
Mississippi Valley Division

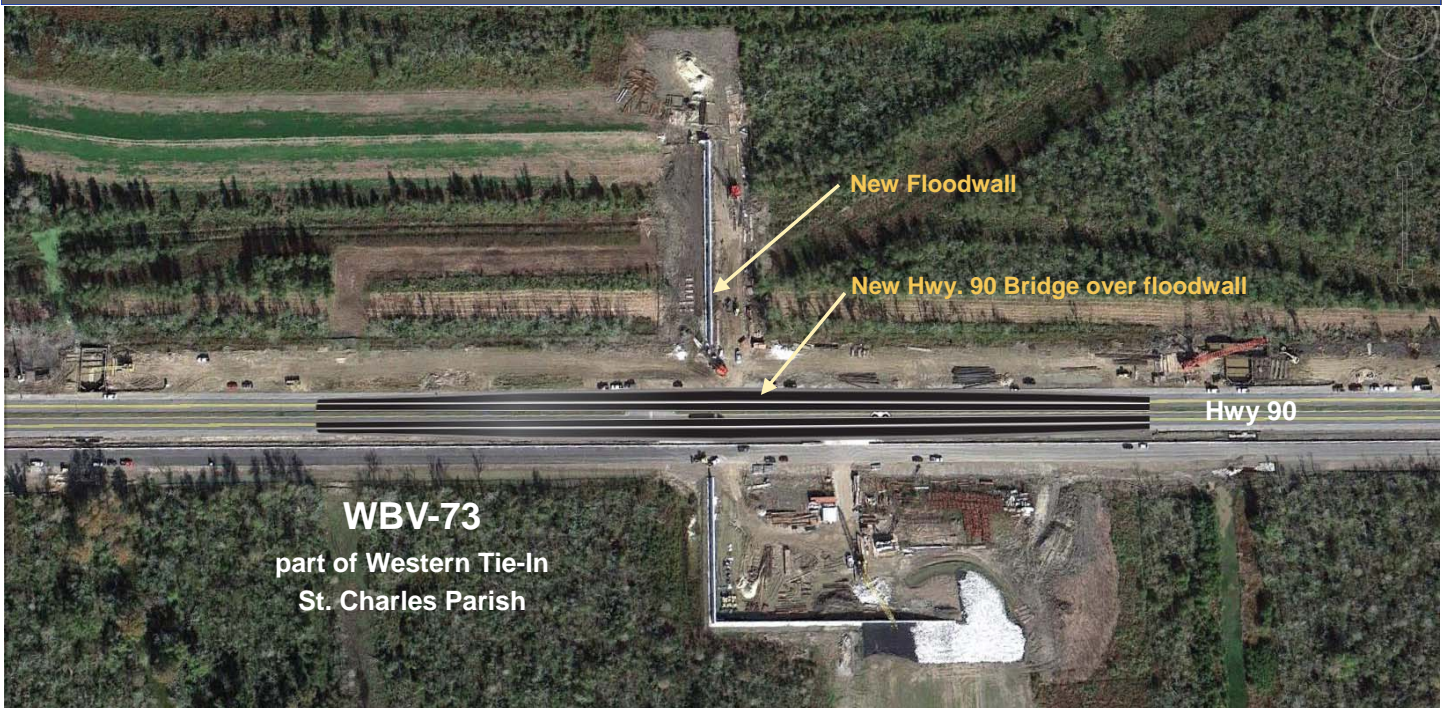


Corps Hurricane Response

Task Force Hope Status Report Newsletter

January 28, 2013

Construction of HSDRRS: a sometimes bumpy road



With 424 contracts to complete within an ambitious timeline, construction of HSDRRS offers occasional surprises on road to completion

by Susan Spaht

For the past seven years, the U.S. Army Corps of Engineers has been busy designing and constructing the \$14.6 billion Hurricane and Storm Damage Risk Reduction System (HSDRRS) for the Greater New Orleans area. With

more than 420 contracts needed to complete the system, one might not be surprised to learn that some construction contracts have experienced unexpected challenges and bumps along the road to completion. “When it comes to construction,” said Stuart Waits, Chief of Construction for the Corps’ New Orleans District, “expect the unexpected.”

The Corps of Engineers and its contractors have done a remarkable and historic job in designing and constructing this massive mission in such a short timeframe. Several

months from now, the Corps will turn over ownership of the 1.8-mile IHNC Surge Barrier, the longest project of its kind in the world, to the State of Louisiana, the non-Federal sponsor, to maintain and operate. And soon, the Corps will also give the State the keys to the West Closure Complex, with the largest sector gates in the United States, and the largest drainage pump station in the world. These complex, state-of-the-art projects, costing approximately \$1 billion each, are being completed with few

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surprises. Yet some of the seemingly simpler and much smaller projects in the system have presented some unusual and interesting challenges.

Dealing with Nature

“There are some construction hold-ups we expect to occur and we factor those into our contract schedules,” said Waits, “like rain. We know that living in Louisiana will mean occasional work delays due to heavy rain.” To further elaborate, Waits added, “One day of rain would only mean one lost day of construction for a structure-type contract; but one day of rain could delay a levee contract for up to a week. We know that and we are prepared for it.”

Occasionally, however, there are surprises that occur during construction that cannot be planned for. Sometimes these surprises hold up construction, and sometimes not. “I think most people would be surprised to learn that our construction crews have had to rework their schedules because of nesting egrets,” said Waits. Nesting egrets? That’s right, nesting egrets are protected by the Migratory Bird Treaty Act and cannot be disturbed during their nesting cycle. “Past contracts have been delayed by this before,” explained Waits, “but we manage the risk by working with the appropriate agencies and including provisions for this in the at-risk contracts. We’ve learned from past experience.”



Stuart Waits, Chief of Construction

In addition to frequent rain and nesting egrets, Mother Nature has provided a few other challenges for the Corps and its contractors. For example, tropical storms and hurricanes. Over the past seven years of constructing the HSDRRS, the Greater New Orleans area has experienced three hurricanes and three tropical storms.

When a hurricane or large tropical storm is forecasted for HSDRRS construction areas, work will stop ahead of the storm while the crews close all construction gaps to prevent possible surge from entering the area. “Safety is always our number one concern,” said Waits, “safety of the public and safety of our work crews. Ahead of a storm, we secure the construction sites, close any con-

struction openings, and the contractors send their work crews home until it is safe to resume work.”

Another unexpected construction challenge for a few contracts has been feral hogs. In some

remote areas of the HSDRRS, especially in St. Bernard Parish, wild hogs root through freshly-planted levee grass while feeding (see page 3), and leave giant holes in the grass. The Corps and its contractors have repeatedly repaired those levees and replaced the grass to ensure the stability of the levee. For levee projects

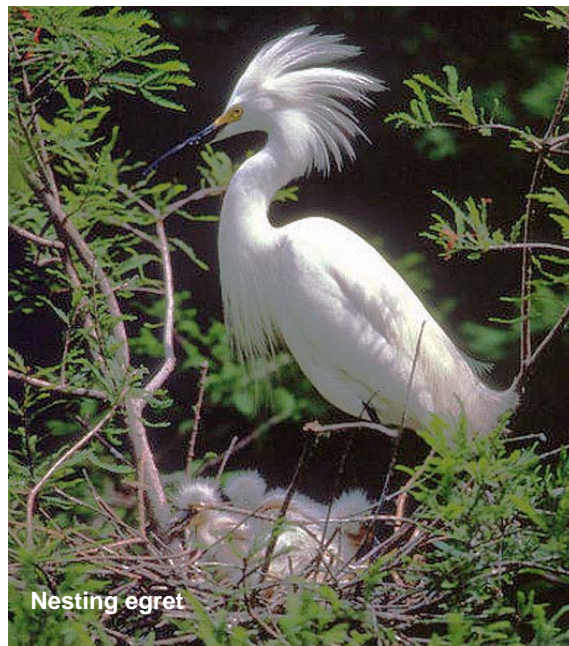


Photo: US Fish and Wildlife Service

that have been turned over to the local sponsor, those groups are working with the Wildlife and Fisheries Department to explore methods to stop the feral hogs from using levees as a meal source.

Mighty Mississippi

In the spring of 2011, construction of the HSDRRS was impacted by the historic Mississippi River high water event. “We were working on levee raises along the Mississippi River near Belle Chasse which are co-located with the HSDRRS,” said Waits, “when the river rose to a historically high level. We had to stop the levee embankment work and place protective measures on the exposed fresh embankment to prevent any possible erosion or damage to the levee.” (see page 6) Several weeks passed before the river receded to a safe level and construction work could resume. The construction schedule was unavoidably affected for that portion of the HSDRRS.

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Feral hog damage
St. Bernard Parish floodwall, LPV 146

USACE Photos by Todd Grantier

Feral hog damage
New Orleans East, LPV 109.02a

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Airport delay

The contract for LPV-3d.2 called for slightly relocating, and raising and widening about 1,600 feet of levee at the foot of the east/west runway at the New Orleans International Airport. A simple job, right? No, it wasn't, as Project Manager Mervin Morehiser explained. "This is the most important runway at the airport because it is the airport's only instrumented runway (*pilots can land on it using instruments*). And the landing lights for that runway extended out and across the existing levee. Those lights assist pilots when landing and are never supposed to be turned off. We were faced with the complex

task of building a levee across them and the cables that provide them with power."

Morehiser noted that construction on this project was delayed from the beginning so the Corps and its contractor, and the airport and their contractor, could decide who would do what work and how. "We were responsible only for the levee work," explained Morehiser, "while we left the responsibility for the relocation of the landing lights to the airport's contractor. This job took quite a bit of coordination as we worked very closely with the airport's team."

The end result was the construction of two light foundations and a "cable bridge" passing over the levee which supported the power for the runway lights (*see page 4*). The cable bridge and the new light foundations were constructed first, then the levee was constructed to the proper elevation

and width under the cable bridge and around the runway lights. "That was a very delicate job."

To complicate matters more, the Federal Aviation Administration has very stringent regulations regarding the height of structures at the end of an airport runway. The levee had to be constructed high enough to meet the Corps' new design criteria, while the top of the cable bridge had to be below the FAA's threshold. "We were able to construct the levee to our elevation requirement," said Morehiser, "and the cable bridge was constructed within FAA regulations over the levee with only inches to spare."

Crossing the tracks

Constructing a floodgate over railroad tracks might be the toughest, most challenging job encountered during construction of the HSDRRS.

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The reason it was so hard is because the trains never stopped rolling. “We had to work around ‘track windows,’” explained Senior Project Manager Jeff Williams who was Project Manager on two railroad gate construction contracts, WBV-75 and WBV-77. (see page 6) “The railroad companies would give us their train schedules and we would work our construction schedules around those. Obviously, we could not do any on-ground construction when a train was expected to pass along the tracks. This extended the construction schedule to more than two times longer than normal.”

To complicate matters worse, the tracks across WBV-77 are the busiest route in Louisiana for that railroad company. That track had three lines that hosted 23 trains a day; and the company announced mid-way through negotiations that they planned to add another track. “That

meant a re-work of the plans and specs,” said Williams.

The HSDRRS work at both sets of tracks required driving sheet piles to secure the floodgates. To drive the piles, the work crews had to remove the tracks, drive some piles, then replace the tracks before the next train came along. “We often had to work in six-hour and 12-hour track windows,” said Williams. Occasionally, the work crews would show up and find that a train was “parked” on the tracks. “Losing that track window could mean as much as a week lost in the construction schedule.”

Eventually, a team of railroad company employees figured out how to help things along, explained Williams. “They granted us some longer track windows by combining shorter ones.” For example, the Corps’ contractor had eight six-hour track windows, and the railroad employees exchanged those for three 24-hour windows. “That gesture saved us six weeks of work!”

Case Study: WBV-73

A good example of a seemingly straightforward project that turned out to be really complicated is WBV-73. This project involved building a floodwall and a highway bridge over the floodwall. Below is a chronology, as explained by Project Manager Alex Bruno, of how this otherwise simple project turned out to be a really challenging job, and why work still continues today:

1. In 2007, the previously approved alignment (see map, page 5) for the Western Tie-In (including the future WBV-73 project) was to head north in Jefferson Parish just before reaching the St. Charles Parish line, cross Hwy. 90, and end in the wetlands before reaching Waggaman. The end date for construction of this section of the HSDRRS was projected to be June 2011. As the design of the HSDRRS developed, the Corps design team decided instead to con-

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tinue the Western Tie-In to the west, paralleling Hwy. 90 into St. Charles Parish, then crossing the highway and tying in to the Mississippi River levee below Ama. “That decision meant that WBV-73 was getting a later start than most other projects,” said Bruno.

2. “One of our earlier challenges was how do we pay for this project?” The project involved a primary feature of the HSDRRS (a floodwall), a *highway relocation*, and a major evacuation route,” explained Bruno. The Federal government was responsible for the cost of the floodwall and the bridge up to a certain height. The non-Federal sponsor is always responsible for relocations, but that was only part of the cost of the project – and that presented the cost dilemma. “We had to determine the fair share for the non-Federal sponsor, and it had to be settled before we could award a contract for construction,” said Bruno.

WBV-73
January 10, 2013



3. Environmental issues presented another major consideration for WBV-73. “The question was how can we build a wall around a wetland without disturbing the water exchange?” said Bruno. “That required coordination with the state environmental agencies and the local stakeholders. It was a time-consuming process, and added to the total time it took to plan and design the project.”

4. To complicate matters further, a 100-foot area, over which the floodwall was to be built, crossed eight separate pipelines owned by eight separate companies including the parish. These pipelines were used for water, natural gas, chemicals, etc., and all of them had to be relocated. “Each company and St.

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In the spring of 2011, the Mississippi River rose to unprecedented heights. HSDDRS construction work on the co-located river levees had to stop while protective measures (see above) were put in place to prevent possible erosion or damage to the levees. This historic high river event lasted for several weeks which affected the construction schedule.

USACE Photos



WBV-75
Floodgate construction over railroad tracks

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Charles Parish had to be contacted and negotiated with separately to make arrangements for relocation. "It was an unusual situation to have that many relocations in such a small space," said Bruno, "and it took a lot of time to work this out."

5. Detour roads were needed on either side of Hwy. 90 for traffic to use while the contractor constructed a highway bridge under which the

floodwall would be constructed.

That's when they discovered the differing site conditions. "We found that the soil conditions were much weaker than we anticipated," Bruno said. "We had to stabilize the soil with deep soil mixing (*mixing soil with concrete*). That was a big setback for our completion schedule," Bruno added. "After that, it was smooth sailing."

6. Meanwhile, all during construction, the contractor and Corps team

had to have pre-positioned Hesco baskets on site at all times. During tropical events, these sand-loaded metal baskets are used to close openings in construction to prevent storm surge from entering the area. Over the course of the project, the team stopped construction twice to deploy the baskets across the highway. That was during Hurricanes Gustav and Isaac. "And remember," noted Bruno, "Hwy.90 is a major evacuation route, so this was a very sensitive and timely maneuver for us as well as everyone who depends on that highway for their evacuation."

7. After all the surprises and setbacks on WBV-73, work was finally expected to be completed at the end of this month. However, the project has encountered yet another bump in the road, although this one is by choice. It was decided by the project delivery team that a drainage feature should be added to the contract. "The drainage feature was originally supposed to be completed under a separate contract," said Bruno, "but we decided to add it to the existing contract." The purpose of the drainage feature is to allow tidal exchange into a wetland area, and to protect Hwy. 90 from overtopping during storm events.

WBV-73 is now planned for completion in May 2013. The good news is that the public probably won't notice that work is continuing in the area because the Hwy. 90 bridge will be opened for traffic in February, and the public will simply be driving over the construction area.

"Sometimes things are just not as easy as they look," said Bruno.

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End of the Road

“While constructing the 350 miles of the Hurricane and Storm Damage Risk Reduction System, we have encountered a wide variety of logistical challenges,” said Carol Burdine, Deputy Chief of the Protection and Restoration Office. “Over the past seven years we have been faced with hurricanes and tropical storms, technical issues, relocation of utility poles and roads, and subsurface surprises. We’ve had to coordinate construction across seven different railroad tracks, and build a levee with airplanes landing just overhead.

“Along the road to completion we’ve designed more efficient ways to get a job done, and we’ve conducted field testing on new products that we think will add extra safety to our levees. We’ve coordinated with our stakeholders, partners and the public along the way, and we’ve listened to



Carol Burdine, Deputy Chief of PRO.

their ideas and addressed their concerns.

“The HSDRRS has been a remarkable and challenging construction journey and one that we are all proud to have been part of.”



Project Managers Alex Bruno (left) and Mervin Morehiser confer with Senior Project Manager Jeff Williams.

USACE Photos

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